

# Highlights

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## Washington SCIENCE TRENDS

MISSILE PROPELLANT PROBLEMS will be highlighted by congressional investigators who want to find out whether the U.S. petroleum and chemical industries have fallen behind Soviet counterparts in the realm of liquid and solid rocket fuels. House Space Committee Counsel George Feldman told Washington Science Trends that industry leaders will be invited to air their views and suggestions at a series of hearings or "seminars" following the November Congressional elections.

The committee hopes to learn whether or not the facilities and technical competence of American industry should be marshalled in a concerted effort to "leapfrog" the Russians. The reasoning is that a program resulting in high-performance fuels would compensate somewhat for any lag in rocket engine design.

PROCUREMENT POLICIES for the new National Aeronautics and Space Administration are also on the committee agenda. Staff members are now drawing up new purchasing regulations as the basis for legislation to be presented in the next session of Congress.

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METEOROLOGICAL RESEARCH may be expedited by a new Navy rocket which will be unveiled and test-launched for the first time at White Sands Proving Ground, New Mexico this week, probably Wednesday. The ARCAS (All-Purpose Rocket for Collection of Atmospheric Soundings) is a 4½ inch, 6½ foot, 71 pound solid propellant device manufactured for the Navy by Atlantic Research, Alexandria, Va.

ARCAS is of interest because it is a "low cost" vehicle developed for research up to 40 miles above the earth's surface. In volume construction it might cost less than \$400 and would therefore prove a boon to university and private research organizations interested in an efficient, safe and economical atmospheric sounding system.

A Novel Feature is the rocket's metallized parachute, designed to return meteorological instruments to earth, and to simplify radar tracking. The possibility of extending the ARCAS' range by air-launching is now under study.

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(EDITORS NOTE: Readers will find a handy new list of catalogs of technical reports enclosed with this week's edition of Science Trends. Additional copies are available without charge from OTS, U.S. Department of Commerce. Similar materials from government agencies will be supplied periodically to our subscribers as part of our service.)

MANNED SATELLITE PROPOSALS have been given the go-ahead by the Pentagon's Advanced Research Projects Agency and the new Space Administration. The goal is to have an American in orbit within 24-36 months. Details were still being kept secret at deadline, but here is how officials have been approaching the program:

- \* A ballistic missile, probably the Atlas, could be used as a launching vehicle to place a 2100 pound capsule in an orbit of approximately 120 miles at speeds close to 25,000 feet per second.

- \* Capsule will be constructed of heat and sound absorbing materials and will use small gas jets for stabilization and to prevent tumbling. Preliminary designs called for a capsule somewhat similar in shape to an advanced ICBM nose cone, about seven feet in diameter.

- \* The "Pilot" will be placed in a special pressure vessel within the capsule. He, or a ground crew, will fire special retro-rockets when the time comes to slow down for re-entry into the atmosphere.

- \* At about 25,000 feet, a large parachute will be used to lower the manned satellite slowly to earth. A parachute and ejection device could also be used should there be a launching mishap.

Reliability of launching vehicles is the major stumbling block to such a project. Animals will be used in preliminary tests.

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WATER POLLUTION BY INDUSTRY has now been classified as an important target by the U.S. Public Health Service. Plans are being drawn up for a massive federal-state assault on sources of pollution and funds will be allocated for new research for removal of wastes or conversion of wastes to harmless or useful materials. Officials explain that they know how to identify and treat normal household wastes but that industrial chemicals and agricultural insecticides pose a major problem.

Health Service officials are stepping-up their activities under Federal laws which authorize them to hold conferences in areas where interstate streams are seriously polluted. Failure by industry to carry out specific projects resulting from such hearings could bring court action.

ATOMIC ENERGY COMMISSION is taking a major step toward easing the problem of radioactive liquid wastes. Construction began last week on a pilot "calcining" plant at the National Reactor Station, Idaho. Officials describe the process as a relatively simple method of reducing the volume of liquid waste to about one-seventh of its ordinary bulk. Corrosiveness is also diminished. If the \$6 million pilot plant works as well as expected the AEC will give the go-ahead for full scale treatment plants elsewhere.

FEDERAL STIPENDS AND FELLOWSHIPS will be increased as the result of recommendations by senior scientists in training centers throughout the nation. Additional money will come from the National Science Foundation and the Public Health Service for programs in non-federal, non-profit research institutions. At the predoctoral level stipends will be increased by \$200 to \$1,800 for the first year, \$2,000 for the intermediate year and \$2,200 for the final year. At the postdoctoral level the sums will be \$4500 for the first year, and \$5000 for the second year. Participants in both programs will now receive \$500 for each dependent.

Training of skilled workers in the mental health field through Federal grant and fellowship programs has shown a "marked increase" according to the National Institutes of Mental Health. The money goes to medical schools, schools of osteopathy, clinics, hospitals, university psychology departments, collegiate schools of nursing, schools of social work and schools of public health.

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NATIONAL SCIENCE FOUNDATION, which has been scattered around Washington, has now centralized its offices in the former headquarters of the Atomic Energy Commission. The address is 1951 Constitution Ave., Washington 25, D. C. and the telephone is STerling 3-2140.

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ELECTRONIC TEST EQUIPMENT should be able to predict future serviceability of components, according to Edward J. Engoron, Maintenance Engineering Director for the Department of Defense. He calls upon industry for a method of determining how much longer a system or component can be expected to perform dependably. He also warns electronic laboratories that standardization of test components is becoming an "acute need" in weapon systems.

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OCEANIC RESEARCH and related marine sciences will take an important step forward under plans approved by delegates to the International Council of Scientific Unions at a meeting here. An international co-operative attack on the scientific problems of the Indian Ocean is being planned for 1959 - 1962. At least 15 ships from eleven different countries are expected to participate. Working groups have been formed to consider extended research in these other fields; radioactivity in the ocean, carbon dioxide in the ocean and atmosphere, measurement of the productivity of the sea, and physical properties of sea water. The worldwide net of stations for sea-level recordings will be continued and reports on mean sea level will be issued more frequently.

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Looking Ahead: U. S. Bureau of Mines and officials of the AEC Radiation Laboratory at Livermore, Calif. will meet this week on plans for recovery of oil from shale through controlled nuclear explosions..... the Army expects to announce a major radar advance early this week, a system developed by Hughes Aircraft Co.

THE CHECKLIST

- ( ) Extended-Range and Space Communications surveyed in papers presented before a national symposium in Washington Oct. 6-7. Program Abstracts available free. Symposium record, available about Dec. 1 will cost \$2 or less. (Write John J. Renner, IRE, Jansky & Bailey, Inc., 1735 DeSales Street, N.W., Washington 6, D.C.)
- ( ) Congressional action on science during the last Congress outlined in report dealing with proposals for the establishment of a Federal Department of Science and Technology. 67 pages. Free. (Write Committee on Government Operations, Room 249, Senate Office Bldg., Washington 25, D.C.)
- ( ) Radioisotopes in medicine, industry and agriculture and research into reactor-produced radioactivity surveyed in a new bibliography containing nearly 6000 references categorized into 30 fields. 267 Pages, \$2.25. (Write OTS, Department of Commerce, Washington 25, D.C. for report TID-3073, Isotopes)
- ( ) Reports on contamination of the moon and oceanography approved by the International Council of Scientific Unions are available in limited quantities. (Write Information Office, National Academy of Sciences, 2101 Constitution Avenue, Washington 25, D. C.)
- ( ) Space Agency fact sheets and biographies of leading officials available in limited quantities. (Write Information Office, NASA, 1520 H Street, N.W., Washington 25, D. C.)
- ( ) Foam Fire Fighting, with substances similar to those employed in homes and industrial plants to remove grease and dirt described in a new report on laboratory and field tests. Free. (Write Bureau of Mines, Publications-Distribution Section, 4800 Forbes Avenue, Pittsburgh 13, Pa. for Report of Investigations 5419)
- ( ) New standard samples of ingot-iron and low-alloy steel now available in a set of eight from National Bureau of Standards. The samples are designed for control of composition in the iron and steel industry and for analysis of the finished products by both the producer and consumer. (Write National Bureau of Standards, Office of Technical Information, Washington 25, D.C.)
- ( ) Metal Fatigue-Crack, which is usually the first sign of metal failure, has undergone new experimentation. The studies point the way to investigation of the influence of geometrical factors on fatigue. (Write National Bureau of Standards, Office of Technical Information, Washington 25, D.C.)
- ( ) Research in Ferrous Metallurgy, a bibliography containing references to more than 100 scientific papers on use of models and pilot plants, now released for industry use. Free. (Write Bureau of Mines, 4800 Forbes Avenue, Pittsburgh 13, Pa. for Information Circular 7851)



